

**REMARKS**

Reconsideration is respectfully requested.

A Petition for the Extension of time which extends the period of response to the Office Action for a period of two months from March 24, 2004 to May 24, 2004, including authorization to charge the undersigned representative's charge account, is transmitted herewith.

Claims 19-26, 28, and 30-36 are pending in the application.

Claims 19-23, 26, 28, 30-32 and 35-36 have been rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. A further objection states that the specification fails to teach specific working examples or operable examples of the claimed functions and therefore fails to enable one skilled in the art to make and/or use the invention.

The Applicant respectfully submits that the disclosure provides sufficient disclosure to enable those skilled in the art to make and use the claimed invention. In order to satisfy the enablement requirement, the specification need not teach what is well known in the art. The Applicant submits that any person skilled in the relevant art would construe "non-diffracting grey scale region structure types" to refer to surface relief structure types which are non-diffracting and which scatter incident light in different directions such that a region composed of structures of a particular type will appear to be a particular shade of grey, the particular shade of grey being dependent on the diffuse scattering characteristics of each particular structure attributable to its physical structure. Furthermore, what specific structures are included in the "predefined group" would be easily determinable by one skilled in the relevant art on the basic concept that the

"physical characteristics" that are capable of providing "a particular level of diffuse scattering of incident light" are that flatter, smoother surface structures have lesser diffuse scattering characteristics and will therefore appear a lighter shade of grey to the eye of an observer than a rough, irregular surface structure which will have greater diffuse scattering characteristics and will therefore appear a darker shade of grey to the eye of an observer. Therefore, identifying the physical structures included in the "predefined group" would be a simple matter of experimentation. Any person who is skilled in the relevant art would be well aware of the various forms that the "physical characteristics" may take and how they are provided. Therefore, the Applicant contends that it is not necessary to explicitly describe the various forms as which the structures may take, or as stated in the Office Action, to "teach specific *working examples* or *operable examples* of the claimed functions" (emphasis in original). Any person skilled in the relevant art would understand that such surface relief structures come in the form of variously shaped troughs and ridges and that the size and spacing of the structures selected is dependent on the desired effects.

The Office Action has separately rejected claims 19-26, 28, and 30-36 under 35 U.S.C. § 103(a) as being obvious over Lee (U.S. Patent No. 5,825,547) in view of Solmsdorf (U.S. Patent No. 5,808,758). Lee is directed to an optically variable device that uses diffraction to generate one or more images, which images are observable from particular ranges of viewing angles. The device disclosed in Lee has a surface relief structure which results in one or more images, each of which can only be viewed from one particular viewing angle.

Solmsdorf is directed to a data carrier with an optically variable element formed by combining two layers, a regularly reflecting (or diffractive) layer and a diffusely scattering layer. The regularly reflecting layer is interrupted in partial areas exposing the diffusely scattering layer

underneath by removal of the regularly reflecting layer. These interruptions may be in the shape of characters, patterns, pictures, logos or the like which may be viewed from a range of viewing angles by virtue of the diffuse scattering effects of the underlying layer which has been exposed.

In contrast, the present invention is directed to an optically *invariable* device that uses diffusion to generate an image. The grey scale regions, provided by the present invention, are comprised of non-diffracting structures selected to provide a particular intensity of diffuse scattering of incident light on the basis of their diffuse scattering characteristics. The diffuse scattering of light enables the image to be viewed from any angle resulting in an optically *invariable* image.

The Office Action contends that the claims of the present Application do not recite the feature concerning the "optically invariable image". The Applicant respectfully submits that the fact that the device claimed in this application has a surface relief structure which generates an optically invariable image is *implicit* in the recitation that "... the regions include grey scale regions ... which together are for generating a macroscopic graphic, line art or text image, ... each grey scale region having a structure selected from a predefined group of different *non-diffracting* grey scale structure types...", By definition the *non-diffracting* grey scale regions will generate an optically invariable image and are not capable of generating an optically variable image. Therefore, this distinction over Lee is implicit in the present wording of the claim.

Furthermore, the Office Action asserts that any diffractive regions referred to in the present application will also provide similar optically variable images to those observed in the device disclosed by Lee. Applicant respectfully submits that whilst some embodiments of the present invention may include diffractive regions which generate one or more diffraction images

or optically variable images in addition to the grey scale regions, it is not reasonable to assert that it follows that Lee describes the limitations recited in the claims of the present application. Any non-diffracting specularly reflecting regions in the device disclosed by Lee do not generate an image, since the relief structures in the specularly reflecting region are not purposely selected to form grey scale regions having characteristics which provide a particular level of diffuse scattering of incident light. The specularly reflecting regions in Lee merely provide a neutral background appearance. They do not generate a macroscopic image that can be viewed by an observer from a range of viewing angles.

The Office Action has expressed the view that since Lee teaches that diffusely reflecting regions can be used to encode auxiliary information, that it follows that this auxiliary information may comprise a macroscopic optically invariable graphic or text image as disclosed in the present application. The Applicant respectfully submits that Lee neither anticipates, nor renders obvious, the provision of an optically *invariable* image comprised of specifically selected grey scale region structure types each of which provides a particular level of diffuse scattering of which may be found in the device disclosed by Lee are formed by having randomly spaced grooves, that these equate to the grey scale region structure types which are specifically selected from a predefined group of such structure types and that it is obvious to do so.

Solmsdorf teaches that macroscopic graphic images may be produced using diffusely scattering regions by removing an overlying regularly reflecting layer to form markings which will be visible from any viewing angle by virtue of the diffusely scattering layer which becomes visible when the regularly reflecting layer is removed. That is, the macroscopic graphic, shown in Figure 1 of Solmsdorf, is not generated by arranging a plurality of grey scale regions having different diffuse scattering characteristics to generate a particular image, but by removing the

regularly reflective layer to expose the underlying diffuse scattering layer. The form in which the regularly reflective layer is removed dictates the form of the macroscopic graphic. Therefore, Solmsdorf clearly fails to teach or suggest generation of a macroscopic graphic image by providing a surface relief structure including a plurality of grey scale region structures each selected to provide a particular level of diffuse scattering of incident light.

Whilst the Applicant concedes that both Lee and Solmsdorf disclose the use of diffusely reflecting regions in addition to diffraction regions, the diffusely reflecting regions in the prior art descriptions merely act to contrast images generated by the diffraction elements. Although both Lee and Solmsdorf may be construed to suggest that the diffusely scattering regions can encode auxiliary information, combining these citations fails to teach towards the underlying concept of the present invention, which involves the selection of different grey scale region structures to provide a particular intensity of diffuse scattering of incident images and generated by different scale region structure types scattering different intensities of light when the device is viewed from any direction.

Each grey scale region structure type is selected from a predefined group of non-diffracting ray scale region structure types for having a particular degree of diffuse scattering of incident light. Selection takes place through design and/or experiment based on the knowledge that flatter, smoother surface structures will have lesser diffuse scattering characteristics and will therefore appear a lighter shade of grey to the eye of an observer than a rough, irregular surface structure which will have greater diffuse scattering characteristics and will therefore appear a darker shade of grey to the eye of an observer. Neither Lee nor Solmsdorf, alone or in combination, suggest or expect the security enhancement benefits which are derived by generating the macroscopic images using the non diffractive elements of the device. In fact, both

Lee and Solmsdorf teach away from this principal feature of the present invention by using usual diffractive elements to provide the security elements of the device (in the form of an optically variable image) and, in some cases, using diffusely scattering regions as background merely to provide contrast to the diffractive regions.

Given that independent claims 19, 24 and 33 have been distinguished over Lee and Solmsdorf, it is respectfully submitted that a *prima facie* case of obviousness has not been made out, and the rejections of those claims, as well as the claims dependent thereon, are improper.

For the above reasons, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections and earnestly solicit an indication of allowable subject matter.

Respectfully submitted,



Vangelis Economou -Reg. No. 32,341  
c/o Ladas & Parry  
224 South Michigan Avenue - Suite 1200  
Chicago Illinois 60604  
Tel. No. (312) 427-1300

May 24, 2004